



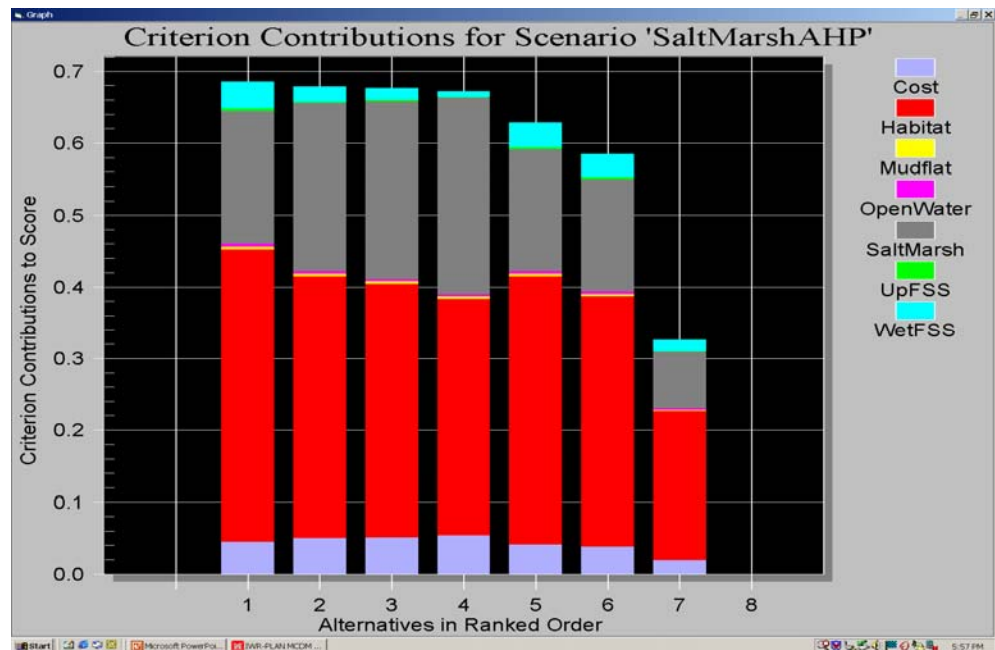
US Army Corps
of Engineers®

Flood&Coastal Storm Damage Reduction R&D Program

Multiobjective Plan Formulation and Evaluation Manual

Description

The U.S. Army Corps of Engineers' Planning Guidance (ER 1105-2-100) states that projects be formulated for multiple purposes "whenever possible, subject to budgetary constraints." Further, EC 1105-2-404 (Planning Civil Works Projects under the Environmental Operating Principles) and EC 1105-2-409 (Planning in a Collaborative Environment) instruct Corps planners to undertake multiobjective planning, but do not explain how to do it. Currently, there are few "go by" examples of completed Corps feasibility studies exhibiting approved multiobjective plan formulation and evaluation procedures. Because systematic approaches to accomplish multiobjective project formulation are not currently available to Corps planners, a manual is being developed to provide suggested approaches for conducting multiobjective project formulation and evaluation and to provide suitable case study examples. The manual will describe differences between multipurpose/multiobjective project planning (e.g., flood damage reduction and ecosystem restoration) and single purpose/objective project planning (e.g., just flood damage reduction); provide procedures for formulating and evaluating alternative plans that provide multiple outputs; and demonstrate techniques to conduct trade-off analyses to help select the recommended multiobjective plan. A Multi-criteria Decision Analysis (MCDA) module of Institute for Water Resources (IWR) Planning Suite software is being developed to demonstrate how the effects of multiobjective alternative plans can be evaluated to provide decision-makers with information to ultimately select a recommended plan. A prototype graph from the MCDA module of IWR Planning Suite graph is shown in the figure, displaying the contributions of various criteria to the total



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“scores” of various multiobjective, multioutput alternative plans. Higher scores equate to better plans given the criteria employed, the preferences (weights) assigned to the criteria, and the ranking method employed.

Benefits The manual will better enable Corps planners to address EC 1105-2-404 and EC 1105-2-409, by providing in-depth discussion of how to develop and evaluate alternative water resources plans that address both national economic development (NED) and national ecosystem restoration (NER) objectives, as well as the regional economic development (RED) and other social effects (OSE) accounts. Formulation of projects that incorporate the Corps' environmental operating principles and that better balance multiple objectives should result. The MCDA software module should reduce the time and costs for Corps project planning, and assist in decision-making by facilitating inclusion of multiple objectives in evaluating and selecting alternative plans.

Status A kick-off meeting with Headquarters, U.S. Army Corps of Engineers and IWR staff took place in early 2007. Selection of the multiobjective case study (Cameron Run Watershed Study, USACE, Baltimore District) and meetings with Baltimore District planners took place during the summer of 2007. First drafts of the manual were completed by the end of 2007 and revisions to the MCDA software will be completed during the winter of 2008. Both manual and software should be completed by the spring of 2008.

Distribution Source(s) When completed, the manual will be available to download from the IWR Web site (<http://www.iwr.usace.army.mil/index.cfm>) and possibly from the HQUSACE's planner's Web site. The MCDA module will be a component of the IWR Planning Suite software and will be available to download from the IWR-Plan Web site at: <http://www.pmcl.com/iwrplan/>

Available Documentation The Multiobjective Plan Formulation and Evaluation Manual is in draft form. The MCDA module for IWR Planning Suite is a beta version. When completed and released, it will include a user's guide and student tutorials. Model certification in compliance with the requirements of the Planning Model Improvement Program (PMIP) will be pursued.

Available Training Specific training on conducting multiobjective planning and using the MCDA module is not yet available. It is anticipated that procedures from the manual and software instruction will be integrated into planning-related PROSPECT training courses and IWR Planning Suite software training workshops. The latter can be arranged on a District or regional basis upon request on a reimbursable basis. Costs vary based on client needs.

Available Support When the Multiobjective Plan Formulation and Evaluation Manual and MCDA module are completed, support can be obtained by contacting Leigh Skaggs, Darrell Nolton, or Lillian Almodovar at CEIWR.

Application The Manual and MCDA software module will have broad application to Corps planning efforts nationwide, especially multiobjective and watershed projects.

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Additional information can be found at :
<http://www.iwr.usace.army.mil/inside/products/proj/factproj.cfm?projid=280>

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